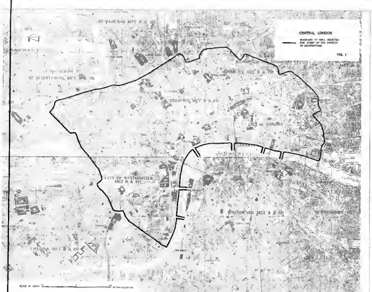

ST PANCRAS MET B & PH
ST MARYLEBONE MET B & PH
FINSBURY MET B & PH
HOLBORN MET B & PH
CITY OF LONDON
CITY OF WESTMINSTER MET B & PH
SOUTHWARK MET B & PH
BERMONDSEY MET B & PH
CHELSEA MET B & PH
CENTRAL LONDON
BOUNDARY OF AREA SELECTED FOR STUDY OF THE EFFECTS OF RESTRICTIONS
SCALE IN MILES

FIG. 1

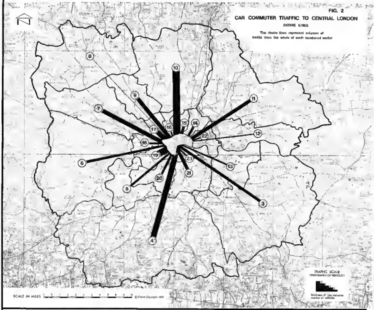


FIG. 2

CAR COMMUTER TRAFFIC TO CENTRAL LONDON

DESIRE LINES

The desire lines represent volumes of traffic from the whole of each numbered sector

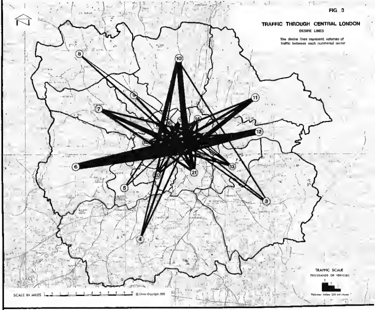
© Crown Copyright 1966

FIG 3

TRAFFIC THROUGH CENTRAL LONDON

DESIRE LINES

The desire lines represent volumes of traffic between each numbered sector



Introduction

Our terms of reference were to make an appreciation of means of restraint of urban traffic, assessing the feasibility of possible methods, their effectiveness and the probable costs. We were directed to give priority to considering methods which seemed most likely to be capable of being introduced in the next few years.

The Buchanan and Crowther Reports on *Traffic in Towns*[1] drew attention to the impossibility of providing in full for the expected growth of demand for car travel in town centres, and discussed the broad possibilities for limiting the use of vehicles in towns. The Report of the Smeed Panel on *Road Pricing*[2] considered the technical possibilities and economic case for using price to control the demand for road space. The Panel investigated the possibilities of various means of pricing, including differential fuel taxes, parking charges, differential licence charges, employment and property taxes, and concluded that the best method would be to charge for the actual use made of congested roads, using some form of meter.

It would take several years to introduce direct road pricing* by means of meters, even assuming that the very difficult technical problems could readily be overcome. Moreover, there are other possibilities than limitation by price. We therefore considered possibilities for the shorter-term of:

- (*a*) direct regulation of the use of roads, by means of bans and permits*;
- (*b*) restraint by price, related to:
  - (i) the place where a vehicle is ordinarily kept;
  - (ii) the time and place in which a vehicle is used; and
  - (iii) the time and place in which a vehicle is parked.

The remit for the study covered urban traffic generally. In the event, the scope of our work was limited by the time and information available. We made a broad survey of the need for restraints, from which we saw the most immediate problem to be the growing use of cars in the centres of large cities. Traffic congestion in London is particularly serious. As a great deal of information is available from the *London Traffic Survey** of 1962,[3] we began our detailed studies by making an analysis of the make-up of traffic in Central London* and of the scope for limiting its volume. We then related our findings to traffic in other cities, before going on to consider in detail the various aspects and effects of possible means of restraint.

Although cars are the largest single element of traffic in towns, we recognise that all types of vehicle contribute to congestion. We made a general review of the scope for limiting goods traffic, but further work on this is needed. As public transport* is more economic of road and parking space than the private car, we did not include it in the study, except to consider how its use might be affected by limitations on travel by car.

*See Glossary.

We must emphasise that this study was concerned only with the scope for relieving congestion on town roads, by means of direct or indirect restraints on the use of powered vehicles. It did not go into the effects that these measures might have on other road users – pedestrians and pedal cyclists – or on road safety, environment and urban living generally. In any scheme for the deliberate restraint of traffic in a particular place, all these factors would need to be taken into account.

1 Summary

1.1 The basis of the study

We took as the basis for our study the assumption that where there was no practical possibility of providing enough road space to carry a rapidly growing amount of traffic, the effective choice lay between the growth of congestion, or the control of demand through regulation or price, to bring about a better use of road space. We therefore saw the basic objective of traffic restraint as being to get the best use out of scarce road space, by inhibiting those uses of the road which cost more to others than they benefit tbe users. Restraint of traffic would be likely to help buses, could lead to improvement of environment and might improve road safety, but the achievement of these ends would be incidental to the principal objective considered in this study. Moreover, making the best use of road space in the way we have defined it could reduce congestion, but would not eliminate it.

1.2 The main conclusions

Our main conclusions from this study are—

(1) Traffic congestion acts to some extent as a restraint on road use. Consequently, the growth of vehicle ownership does not seem likely to cause traffic to 'grind to a halt'; but the increasing use of vehicles will further increase the total economic loss from congestion. Congestion will therefore become a more and more inefficient, as well as frustrating, form of restraint. Deliberate restraints would enable traffic to move more freely on existing roads (in Central London, perhaps a quarter as fast again as is now possible), so that the more valuable journeys, including those that were made by bus, could be made more quickly.

(2) Measures which reduced the amount of car commuting could be expected to bring about worth-while improvements in traffic conditions at peak times in Central London, and to a lesser extent in the surrounding inner suburbs. It seems probable that these measures would be at least as effective in reducing congestion in other cities.

(3) Restraints could not, in practice, deter any one type of car use without affecting all other patterns of road use as well. But measures designed to deter car commuters* would be likely to have the least effects on other aspects of urban living.

(4) There is scope for improving traffic flow by imposing restraints on other road uses, notably goods traffic. Although these restraints could have some undesirable as well as desirable social and economic effects, they merit investigation.

(5) The most promising method of restraint, at least for the shorter term, would be to intensify control over the location, amount and use of parking

---

*See Glossary.

space, on- and off-street, especially in order to restrict long-term parking, which is a characteristic of car commuting. In some places control over the use of publicly available parking space may not be enough, and might need to be extended to privately available parking space; this might be costly and could require legislation.

(6) We are far from satisfied that it would be practicable to introduce some system of supplementary licences or admission charges for using vehicles in congested areas, and we are, in any event, doubtful whether in practice a system of this kind would necessarily have advantages over comprehensive parking control. The feasibility and practical effectiveness of these systems as compared with parking controls could not be assessed without experiments requiring legislation.

(7) In our view, the following measures would be either impracticable or ineffective in preventing or relieving traffic congestion in large towns:

(*a*) limiting vehicle ownership, either by taxation or by regulation;

(*b*) extensively banning the use of whole classes of vehicles in towns, with or without exemption by permit;

(*c*) charging higher rates of motor tax for vehicles used in congested areas;

(*d*) toll systems of the kinds now used at bridges and tunnels in this country and on motorways abroad.

(8) If parking controls were to be extended and intensified, or any system of supplementary licences or admission charges were introduced, large increases in the number of traffic wardens or police employed on traffic duties would be needed, though in the longer term changes in legislation might simplify enforcement.

(9) Direct road pricing of the kind described in the Smeed Report is potentially the most efficient means of restraint. It would take several years to develop and put into effect. Although it is by no means certain that a workable system could be devised, its advantages would be so great as to justify further research and development work on it.

2 The objectives of deliberate restrictions on traffic in towns

Cities have experienced traffic congestion throughout history because they represent a deliberate concentration of economic and social activity. But traffic congestion on main roads throughout urban areas – now common at peak times – is a modern phenomenon. In London, peak traffic flows last for up to 2 hours each morning and evening, from Monday to Friday, though in other cities the peaks are shorter. Travel becomes not merely slow, but also unpredictable. In consequence, congestion is frustrating to the individual and costly to the national economy.

Without deliberate and effective counter-measures, congestion is likely to grow worse. Traffic may not 'grind to a halt' – there is a good deal of evidence that this would not happen – but the spread (in area and in time) of the present intensity of congestion increases the risk of widespread traffic jams, precipitated by obstructions from accidents or breakdowns, bad weather or public events.

Commercial and industrial activity and the use of the car for private and business purposes are expected to increase very much faster than the improvement in road capacity which conventional traffic management and the planned urban road programme will bring about. In the country as a whole, the number and potential usage of goods vehicles are expected to grow at about 3% per year, and of private cars at about 8% per year. Though traffic in congested areas can be expected to grow at a slower rate (in Central London the growth of morning peak period traffic was only 1% between July 1964 and July 1965) because of existing restraints (particularly parking difficulties and the restraining effect of congestion itself), the demand on the road system, and hence the growth of congestion, will build up more and more during the next decade and beyond.

In the long term, the capacity of urban road systems will be substantially increased by road building and traffic management; and there is a possibility of some re-arrangement of land use so as to place traffic-generating uses – such as offices, shopping centres and warehouses – where they can be more easily served by transport. But there seems no doubt that road systems will never be developed so as to cope with all the potential demands rising from saturation level car ownership. Thus, although measures are urgently needed to deal with congestion during the next few years, when the most rapid growth in car ownership is to be expected, the problem seems to us likely to face us equally in the longer term.

2.1 Making the best use of road space

Congestion itself keeps some traffic off overcrowded roads, but does not lead to the most efficient use of the roads, because individuals deciding to use the roads do not, in general, take account of the costs to others caused by their decisions. It can easily be shown, as was done in the Smeed Report, that in congested conditions some road users impose more cost on traffic as a whole than they themselves gain from using the road. More would be gained than would be lost if they did not use the road system. The best use of road space is achieved when all these less valuable road uses have been restrained, leaving only those road uses which are of sufficiently high value to cover the costs imposed on others. In this study we have taken the objective of deliberate restrictions to be to bring this situation about.

The total costs of congestion are extremely high, and are increasing every year. It has been claimed, for example, that the present figure for Great Britain is between £500m. and £1,000m. per year. So the idea of eliminating congestion is attractive. But it is important to realise that savings of this size could not be achieved by any rational policy of restraint. These estimates are usually based on the saving in terms of time and vehicle running costs obtainable from an 'ideal' road system permitting traffic in towns to average 25 mph, as compared with present speeds, which range from about 10 mph in central areas to about 20 mph in suburbs. Whether or not the cost of such a road system could ever be justified in a particular town, there is no doubt that the best use of existing road systems, with all the limitations of their layout, will be achieved at much lower traffic speeds. Calculations by the Smeed Panel suggest that where traffic now moves at 10–12 mph, the optimum use might be obtained if speeds were raised by about 3–4 mph. Substantially higher speeds could be achieved only by reducing traffic volumes so much that the value obtained from the road was greatly reduced. Our own study suggests that with, for example, a daily licensing system, the optimum use of the Central London road system would result in a 25% increase in average peak hour speed from 9.1 mph to 11.4 mph (see Chapter 11) – and travel by road could be expected to be more reliable than it is now. Even so congestion costs would not be completely eliminated. Some delays to traffic are, at times, inherent in any sensible provision and use of roads.

2.2 Diverting travel from individual* to public transport

Buses can carry more people than cars, for the same amount of road space. Where the bus provides an acceptable substitute for the car, the best use of road space implies some shift to it, or to a rail service if available. Some degree of shift would result from any policy designed to make the best use of road space. But a shift to public transport is secondary to the main objective. If one took as a main objective the diversion of travellers to public transport without regard to their desires or to the degrees of congestion on the streets, a worse use of road space would result; the losses to some road users would not be offset by the gains of others.

2.3 Road safety and environment

Road safety and the effect of traffic on environment are considerations that need to be taken into account when any kind of traffic management scheme is being planned and put into effect. This is no less true of a system of deliberate restraint of traffic. But, in general, conflicts of traffic, and noise, fumes and visual intrusion are the concomitants of congestion. To the extent that these are reduced by the relief of congestion, deliberate restraint could be expected to have beneficial effects on road safety and environment.

---

*See Glossary.

2.4 Price or regulation?

Discussion of gains and losses to road users, and of the value of various road uses raises the question – by what criterion should these be measured? Although an individual's willingness to pay is, in our society, the most widely used measure of the value to him of any particular service or opportunity, this inevitably gives more weight to the preferences of the better-off. This, coupled with the widely held view that once a road has been provided at public expense, users should not thereafter be expected to pay directly for the use they make of it, has led to suggestions that control over the use of congested roads should be by regulation rather than by price. We have therefore considered methods of restraint by regulation, by price, and by a mixture of the two.

2.5 The broad effects of deliberate restrictions on the use of urban roads

Deliberate restraint of traffic could be expected to affect the pattern of social and economic activity, and, in the long run, the location of land uses in urban areas. In general, journeys cannot be suppressed without interfering with the other activities of which they are part. In addition a price-based system would affect the distribution of income.

For some journeys, such as the journey to work in a town centre by car at peak periods, public transport can offer a reasonable alternative means of travel. The degree of interference might be only slight and the majority of peak-hour road users (including bus passengers) would gain. The long-term effect on the supply and demand for labour in central areas might not be great. The effect of restraints on other day-time uses of the private car would be greater; for example, limitations on shopping traffic could lead to increased use of and pressures for development of out-of-town shopping centres on the North American pattern.

Day-time restraints on goods vehicles might lead to their more efficient use. Where there is little scope for rationalisation (at least in the short term) and no alternative form of goods transport, a change-over towards night working might result. For example, a good deal of wholesale delivery of goods could probably be done in off-peak hours, in the evening or at night. This could bring a radical change in the pattern of working and social life for transport workers, and perhaps for those receiving and despatching goods; and there would be more traffic in what are now the relatively quiet hours. For these reasons the scope for and consequences of restraints on goods vehicles are less easy to assess than those on cars.

There would be losses as well as gains in any system of control. Car commuters diverted to public transport would find the journey less convenient. There would be extra costs to traders in any system of delivery outside working hours. But the gains in terms of improved traffic conditions to the remaining traffic, especially the improved speed and reliability of buses, which carry most people at the peak, should far outweigh the losses. The Smeed Panel calculated that a road pricing system designed to face all vehicle users individually with the full cost of using their vehicles in congested conditions – the price varying on each stretch of road according to the degree of congestion and the time – would bring about a saving in resources of £100–150m. a year.* This calculation was necessarily crude, but it indicates the order of potential benefits.

*This estimate (of which 7% might accrue in Central London) was made up approximately as follows:—

	%
Savings in paid working time	+40
Other time savings	+63
Vehicle running costs	+ 7
Capital savings	+10
Losses	−20
	100

3 The scope for deliberate limitation of traffic

The scope for reducing congestion at the busier times of day lies mainly in:

(*a*) diverting passenger journeys to less congestion-forming means of transport, usually from private cars to buses or trains;

(*b*) diverting traffic to less busy times of the day;

(*c*) diverting traffic to less congested routes;

(*d*) reorganising goods traffic so as to make more efficient use of transport.

There is obviously more scope for, and probably more advantage to be obtained from diverting passengers to public transport, than for diverting goods traffic to some other form of transport; and there is probably more scope for diverting goods traffic rather than personal travel to less busy times of day.

To see what scope there might be for diverting traffic, and the possible traffic effects of doing so, we have attempted some analyses of the make-up of traffic in towns, particularly as to mode of travel and journey purpose. The pattern of road traffic is continually changing, and we had necessarily to use data obtained from past studies, but the figures available provide a basis for a general analysis. The main source of detailed information of this kind about a large city in this country is the 1962 London Traffic Survey*, and we used this as a basis for the study. We were not able to make comparably detailed analyses for other places. But, in so far as the broad composition of traffic in other large towns is comparable with that in London, the conclusions seem likely to apply to them. In particular, the proportion of commuters who travel by car is usually greater in the smaller towns than in the larger ones; so that conclusions on the

Table 3–1 Road traffic across the Central London river bridges on working days in 1962†

(% pcu's*)

Type of traffic	In the 24 hours	In the peak hours
Cars	41·3	47·4
Motorcycles (including scooters)	3·2	7·4
Buses and coaches	13·3	15·6
Taxis	6·6	5·8
Light goods vehicles (including light vans)	14·3	11·3
Heavy goods vehicles (over 3 tons unladen weight)	21·3	12·5
	100·0	100·0

†Throughout the whole of the London Traffic Survey Area, private cars formed about two-thirds of all traffic, and the proportion of buses and taxis was smaller than at the Central London river crossings.

*See Glossary.

contribution of car commuting to congestion in London could be expected to apply with equal or greater force elsewhere. The growth of car ownership and use is by far the greatest potential source of congestion, so this is a point of some importance.

3.1 Traffic in London

Table 3–1 shows the make-up of road traffic crossing the Central London river bridges on working days at peak times and throughout the 24 hours. Table 3–2 shows the pattern of travel by road and rail to Central London and throughout the London area.

Table 3–2 Personal journeys by road and rail in London on working days in 1962

Means of travel	Within the whole survey area		To Central London	
	All day	Morning peak	All day	Morning peak
	%	%	%	%
Car and motorcycle (drivers and passengers)	44·0	34·6	20·5	12·5
Bus and coach	35·8	36·6	27·5	23·0
Rail	18·9	28·2	49·8	64·0
Taxi	0·7	0·2	2·0	0·3
Goods vehicle	0·6	0·4	0·2	0·2
	100·0	100·0	100·0	100·0

These tables show that nearly two-thirds of all peak-hour travel and nearly half of all travel to Central London was by rail. Bus travel accounted for two-thirds of all travel by road to Central London during peak hours, and more than half of all road travel to Central London throughout the 24 hours. At any time of day, substantially more people travelled by rail or bus than by car or motorcycle, both for journeys to the centre and throughout the whole area.

Comparison of the tables suggests that in the peak hours cars and motorcycles contributed three to four times as much to Central London's traffic as buses, but carried only half the number of people. Goods vehicles of all kinds formed about a third of all road traffic throughout the day, but less than a quarter of the greater volume of traffic in the peak hours. There was a disproportionate rise in motorcycle traffic during the peak, consistent with their being used mainly for commuting.

The pattern is therefore of continuing reliance on public transport for the majority of journeys, especially at peak times, with a minority, who use private transport, adding disproportionately to the volume of traffic, especially at peak hours.

3.2 Traffic in provincial towns

A study of Monday-to-Friday road traffic in the central areas of some provincial cities was made in 1964.[4] This showed the patterns in Table 3–3.

Table 3–3 Traffic patterns in the centres of some provincial cities
(% pcu's)

City	Leeds		Cardiff		Reading	
Type of traffic	Peak inward	Off-peak	Peak inward	Off-peak	Peak inward	Off-peak
Cars and taxis	66	58	68	62	61	61
Motorcycles	4	3	7	4	9	6
Buses and coaches	8	7	4	4	4	3
Light goods vehicles	16	21	14	19	20	20
Heavy goods vehicles	6	11	7	11	6	10
	100	100	100	100	100	100

An analysis of commuter travel to the centres of some provincial cities suggests they were made in the ways shown in Table 3–4.

Table 3–4 Peak hour commuter travel to the centres of some provincial cities

City	Birmingham[5]	Leeds[5]	Cardiff[5]	Reading[4]
Population	1·11m	0·51m	0·26m	0·12m
Means of travel—	%	%	%	%
Car and motorcycle	11	19	32	45
Bus	65	65	30	46
Rail	24	14	23	assumed negligible†
Other (including walking)	assumed negligible	2	15	9
	100	100	100	100

†In other towns of comparable size it is less than 2%.

Comparison of Tables 3–1 and 3–2 with Tables 3–3 and 3–4 suggests that the proportion of car traffic in the centres of these cities is higher than in Central London, and that the proportion of car commuting to the centre tends to be much larger in the smaller cities. On the other hand, the proportion of goods traffic in these city centres throughout the day appears to be rather less than in Central London, although it represents much the same proportion of peak hour traffic. The proportion of motorcycle traffic is not greatly different from that in Central London. The proportion of traffic represented by buses is much less than in Central London; even so, in the larger cities more people travel by bus at peak times than by any other means. It appears from this that car travel contributes more to congestion in these cities than in Central London. In general, it seems likely that measures affecting individual transport could be expected to have a greater effect on traffic in provincial cities than they would have in Central London.

3.3 The possible effects of restraints on traffic in Central London

So as to investigate the effects of reducing the amount of road traffic in a city centre, we asked the consultants for the London Transportation Study* to make an analysis of the theoretical effects of eliminating certain types of journey from traffic in Central London. The area selected is shown in Figure 1. It lies within the inner ring route North of the Thames, including parts of Westminster and Holborn, the West End and the City of London, where much of the central business, shopping, entertainment and administrative activity of the capital is concentrated. In 1962, something like ¾m. vehicles entered this area between 8 a.m. and 7 p.m. on a normal week-day. 42% of them were private cars going to destinations in the area, 18% were goods vehicles also destined for the area, and 25% were buses, taxis and motorcycles. The remaining 15% were cars and goods vehicles passing through the area.

It was possible to distinguish car journeys to work, business use (but not distinguishing between purely business use and journeys to work followed by business use) and non-business use of cars. Without making any judgments about the relative desirability of cars being used for any of these purposes, we considered that it would be useful to find out the effects of reducing traffic by the volumes that some road uses represent. The effects of eliminating the following kinds of traffic were therefore studied:

(*a*) car commuting;

(*b*) non-business use of cars;

(*c*) through traffic.

Some estimates were also made of the effects of eliminating motorcycle commuting to the centre. It was not possible, from the information available, to analyse the effects of eliminating goods traffic of various kinds, nor was it possible to analyse the effects of eliminating only some types of through traffic.

3.3.1 Elimination of car commuting

57% of all car traffic entering the area between 8 a.m. and 10 a.m. was commuter traffic. The effects of eliminating this traffic could be expected to be that:

(*a*) the flow of traffic *into* the selected area would be reduced by about a quarter;

(*b*) the total volume of traffic *within* the area would be reduced by about a seventh;

and, assuming that commuters did not use their cars to travel to the outskirts of the controlled area,

(*c*) traffic coming into the inner suburbs would be reduced by about a tenth;

(*d*) there might be a reduction of about one vehicle in twenty in the traffic passing through road junctions four to six miles from the centre of London.

The possible consequences for traffic in the inner suburbs are so complex that these estimates of effects on traffic outside the controlled area can only be tentative.

The effects of small seasonal fluctuations in traffic of even 2 or 3% show that smaller decreases in traffic volumes than these result in significant improvements in traffic flows and greatly reduce the risk of widespread delays arising from minor incidents. Diversion of a substantial proportion of car commuting journeys in this way could therefore be expected to improve the flow of traffic substantially at comparatively small cost. The effect would be confined almost entirely to the morning and evening peaks. Four-fifths of journeys to work fall in the period 8 a.m. to 10 a.m. and, since people who work unusual hours would probably find it less convenient than others to transfer to public transport, there could be advantages in restricting control to the morning peak.

---

*See Glossary.

At normal commuting times, diversion of car journeys to public transport should be possible. This might inconvenience some of those concerned, particularly passengers transferring to or already using the Underground and suburban rail services where, on much of the system, there is only limited scope for increasing capacity in the short term. Two-thirds of car commuters travel from the outer suburbs or beyond (Figure 2). On the basis of the present distribution of work journeys by public transport to the central area, three-quarters of the diverted car commuters might be expected to transfer to rail, and one-quarter to bus. But Figure 2 also shows that a substantial amount of car commuting is from the outer northern and south-western suburbs where the rail services are best able to bear a heavier load. In the longer term, improvements to rail services, such as the Victoria line, could be expected to absorb at least part of the diverted traffic without overloading. Moreover, bus services could be expected to improve, and faster travel by bus could perhaps attract some passengers from the Underground, especially for short journeys in the centre. The additional load on the rail network might not therefore be unacceptable. The capacity of bus routes serving the selected area might have to be increased, but because of improved traffic conditions a proportional increase in the bus fleet would not be needed. But this analysis shows the need to plan any control on car commuting in closest consultation with British Railways and other public passenger transport operators. Plans must be made not only to allow for the primary effects of car users transferring to public transport, but also for the secondary effects of transfers of existing passengers between bus and rail services.

3.3.2 Elimination of non-business use of cars

Non-business use of cars represents a fairly random pattern of travel during the day-time, very different from the peak-hour movement, all-day parking characteristics of commuter travel. It accounted for 9% of car travel into the selected area between 8 a.m. and 10 a.m., and 25% between 8 a.m. and 7 p.m. Elimination of this traffic during the morning peak, as well as eliminating car commuting, would reduce total traffic in the selected area by about a further 2½%. Over the period 8 a.m. to 7 p.m. there might be a reduction of 5%. The effects on traffic outside the area would be small compared with the elimination of car commuting. Moreover, at least some of these journeys would probably continue to be made at the same times of day, but by other means. To the extent that this added to bus or taxi traffic, or to peak rail traffic, the total effect on congestion of eliminating non-business travel would be smaller than the analysis suggests. There is, in some quarters, a tendency to regard this sort of car traffic as 'optional'. Whether or not it can be looked on in this way, its elimination could not, on this analysis, be expected to make much difference to traffic congestion.

3.3.3 Diversion of through traffic

Figure 3 illustrates the complex pattern of the traffic passing through the area. If this were diverted, the volume of traffic in the area would be reduced by about

6%. But the roads and bridges in a wide band round the perimeter of the area are already loaded to capacity at peak times. If none of the diverted traffic were suppressed entirely or transferred to off-peak times, it would add to the load on them. New road capacity would then have to be added on the perimeter equivalent to that of the existing inner ring road – that is, two to four lanes. Otherwise, substantial additional congestion would be created in the inner suburbs, probably countering much of the benefit obtained from improved traffic conditions in the controlled area. Given the present road network, it is inevitable that through traffic will travel through the centre and, in view of the consequences of diversion, this may well be the best use of road space under present conditions. The creation of new road capacity without restrictions could, on the other hand, attract through traffic away from the centre, although it could equally well attract more traffic to the destinations in the central area.

3.3.4 Motorcycle traffic (including scooters)

There is less information about motorcycle journeys than there is about car travel, but it appears that nearly 90% of all motorcycle journeys to Central London are to or from work. The elimination of motorcycle commuting might reduce the volume of peak hour traffic in the area by perhaps 5%, assuming that no increase in other traffic resulted from this restriction. The effect on junction capacity four to six miles from the centre would be less than 1%.

Although these reductions are small as compared with the effects of restraining car journeys, restrictions on cars might lead to greater use of motorcycles as an alternative to public transport. Since motorcycles need, person for person, more road space than even moderately loaded buses, it may be desirable to include them in any scheme for restraint, quite apart from any road safety considerations.

3.4 Goods traffic

Table 3–1 shows that goods vehicles represent, in pcu values, over one-third of traffic throughout the day in Central London, and nearly a quarter of peak-hour traffic. More detailed information about goods traffic in Central London could only be obtained by re-processing the source data from the London Traffic Survey; this was not attempted in the time available. The analyses of goods traffic in the following paragraphs therefore relate to the whole Survey Area,*

Table 3–5 Goods vehicle journey purposes in the London area

Journey purpose	% of total mileage	% of total journeys
Retail delivery	24	56
Wholesale delivery	22	10
Business use, apart from deliveries	10	5
Mail and parcels	10	5
Services, maintenance and repairs	9	10
Journeys back to base	14	7
	89	93

*See Glossary.

and not, as in the case of the other detailed figures, to the much smaller Central London area.

In the whole Survey Area, throughout the 24 hours, 89% of all goods vehicle mileage and 93% of all goods vehicle journeys were for the purposes shown in Table 3–5.

Over 80% of total mileage, and nearly 90% of calls were to the destinations shown in Table 3–6.

Table 3–6 Goods vehicle calls in the London area

Calls at	% of total mileage	% of total journeys
Residences	38	67
Shops	21	12
Industrial premises	13	6
Commercial undertakings	9	4
	81	89

3.4.1 Retail delivery (24% of mileage)

80% of calls to residences were for retail delivery, mainly daily deliveries by milk floats in residential areas. Consequently they did not make anything like a proportionate contribution to congestion on main roads. Retail deliveries may decline as a result of improvements in food preservation and storage methods, changes in shopping habits and other factors. A system of control based on price could be expected to accelerate this trend.

3.4.2 Wholesale delivery (22% of mileage)

67% of wholesale deliveries were to shops, 13% to industry and 7% to commerce. 86% of these journeys took place between 8 a.m. and 5 p.m. The pattern of operations is highly complex and does not appear to lend itself to control by regulation. Any form of road pricing which affected these journeys would be an incentive to change and greater efficiency in the use of road space, for example, through co-ordination of deliveries. In places where kerb-side unloading is the rule rather than the exception, restrictions on this activity could have the effect of diverting some of this traffic to less busy times of day (see para. 3.4.8 below).

3.4.3 Business use (10% of mileage)

This activity was spread fairly evenly over the day. It is a class of travel that does not seem suitable for control by regulation, but like wholesale delivery, might be influenced by price.

3.4.4 Mail and parcels (10% of mileage)

Most of this traffic took place between 8 a.m. and 5 p.m. It is greatest between 10 a.m. and noon, with a marked slackening at mid-day. These services are under Government or nationalised control. Some spreading of the load may be possible.

3.4.5 Services, maintenance and repairs (9% of mileage)

Half of this traffic was created by local authority services, mainly refuse collection. Approaching a quarter (22%) consisted of laundry and dry cleaning collection and delivery. Many of these journeys, like retail deliveries, were not on main roads and accounted for 15% of all calls at residences.

3.4.6 Long-distance haulage

70% of all road goods tonnage is hauled 25 miles or less. Only 6% travels 100 miles or more. If it were sent by rail, the bulk of the tonnage would still have to be taken to its final destination by road. Long-distance road haulage makes a comparatively small contribution to traffic congestion in the larger towns. In London in 1962, 94% of all goods vehicle journeys into and through the London area originated in South-East England; and all the goods vehicle journeys in London which originated outside the London area amounted to only about 5% of the number of internal goods vehicle journeys, other than retail deliveries. Even medium-distance haulage, between 25 and 100 miles, therefore contributes little to congestion in London, and the same may apply to the other conurbations. The motorway programme and trunk road improvements, especially by-passes, can be expected to divert through goods traffic from free-standing towns. But it is possible that where heavy industrialised areas are near to one another or to ports, medium-distance haulage may contribute more to urban traffic congestion than elsewhere.

3.4.7 The Geddes Committee's views

The Geddes Committee on *Carriers' Licensing*[6] concluded that this form of licensing could not be used as an effective means of relieving urban traffic congestion; that it would be impracticable to assess the relative needs of carriers to use their vehicles; and that road pricing offered the best prospects as a way of restraining goods traffic. We endorse this view on the effect of road pricing; it seems more likely to promote the efficient use of goods vehicles than any other means of restraint. This may apply particularly to empty journeys (25% of all goods vehicle mileage) and the planning of delivery rounds of all kinds.

3.4.8 The scope for restraint of goods traffic

Road pricing could lead to more effective use of most forms of road haulage in towns. Short of this, the greatest scope for altering the pattern of goods vehicle traffic seems to be in wholesale deliveries, particularly to shops. The Economic Development Committee for Distributive Trades is already considering means by which wholesale deliveries can be made outside working hours, and measures that might be taken to foster this. Journeys involving a substantial amount of kerbside loading or unloading probably make up about a third of London's goods vehicle mileage and probably account for 5 to 6% of all vehicle mileage in London between 8 a.m. and 6 p.m. It would be necessary to divert most of this traffic to have any significant effect on the contribution made to traffic congestion by moving goods vehicles, though elimination of loading and unloading on main roads could improve their capacity. It is not clear from the information available whether restrictions during peak hours only, or all day, would be needed and what the merits of these possibilities might be. Particular factors in considering the scope for restraint of goods traffic are:

(*a*) the volume of goods traffic that might be affected, as compared with the total volume of traffic;

(*b*) with a price system, the effect the charges would have on goods handling and delivery techniques and on the economy as a whole;

(*c*) the enforcement effort needed for any new waiting restrictions.

3.5 Conclusions on the scope for deliberate limitation of traffic

The estimates quoted in this chapter are of the effects of totally eliminating various types of vehicle use. They have been made in order to demonstrate the scale of effects on traffic, not to propose any particular degree of restraint. In fact, no system of restraint would be likely to result in the complete elimination of any particular element of traffic. A price system would not operate in this way, and any regulatory system would need to allow exceptions to be made.

At peak hours the most significant contribution to congestion is made by cars used solely for journeys to and from work. Traffic movement in the centre of London, and in surrounding areas of congestion, could be significantly improved by restraints which were likely to bear hardest on this class of travel. In other towns, the proportion of car commuters is generally greater than in Central London, and the public transport alternative is the bus using the same road system. The benefits obtainable from deterrents to car commuting could therefore be relatively greater than in Central London.

The next most significant element of traffic suitable for diversion to less congested times of day, or reduction in volume through more efficient use of transport, seems to be likely to be goods traffic engaged in delivery work, especially wholesale deliveries to shops. In Central London about a third of this traffic probably relies to a considerable extent on kerb-side loading and unloading, so that restrictions on this practice are possible means of control.

The scope for diversion of the bulk of goods traffic in towns from road to rail is negligible and the scope for diverting goods traffic is consequently less than for car traffic, at any rate in the shorter term. But the uncontrolled growth of goods traffic could nullify the improvement in traffic conditions obtainable from limiting car traffic. Where restraints are considered necessary they might therefore need to be applied, perhaps in stages, to goods as well as car traffic.

4 The broad means of restraint

We considered various means of restraint, singly and in combination, including:

(*a*) pricing or regulating ownership of vehicles in congested areas;

(*b*) regulating the use of vehicles in congested areas, by means of permits;

(*c*) charging different rates of motor tax, according to area of use;

(*d*) charging for entry or use of vehicles in congested areas, by means of tolls, supplementary licences* or admission charges;

(*e*) charging for, and regulating the use of parking space within a congested

possible effects, advantages and
of devising workable schemes.
er and to what extent various

efined in Chapter 2;

e not, in fact, essential

such as the replacement
o just as much congestion.
easier to make effective
roblems created by claims
requirements and costs.

5 Pricing or regulating vehicle ownership

5.1 Pricing ownership

It has been suggested that cars licensed in congested areas should be taxed at a higher rate than those licensed elsewhere.

A rate of tax which was high in relation to the total cost of owning and running a car could be expected to slow down the growth of ownership in the area in which it was levied. To be effective, the extra charge might have to be £50 or more a year. The incentive to avoid the extra tax would therefore be considerable, though registrations at accommodation addresses outside the area might be minimised by, for example, requiring the address for insurance purposes to be recorded on the insurance certificate or cover note. But the growth of traffic congestion in an area is not directly related to the growth of vehicle ownership in the area, and this is progressively less so as the area selected becomes smaller. If price is to be used as a means of limiting the use of roads in a particular area it seems necessary to put up the cost of *using* vehicles rather than the cost of *owning* them.

5.2 Pricing or regulating street parking by residents

Parking charges levied in such a way as to bear on residents who garage their cars on the street could encourage the provision of off-street parking at economic prices. It would deter new owners, and some residents might get rid of their cars. The alternative of requiring a certificate that off-street garaging was available as a requirement of vehicle registration, as in Tokyo, could also be expected to limit the growth of ownership. But such measures, like pricing ownership directly, would not seem likely to make any significant contribution towards restraining the growth of moving traffic.

5.3 Conclusions on pricing or regulating vehicle ownership

Although pricing or regulating ownership could slow down the rate of growth of car ownership, or even reduce the number of cars kept in congested areas, they would not necessarily achieve the objective of making better use of congested road space. They would be very blunt means of controlling traffic volumes at congested times and would unnecessarily restrict car uses which did not create congestion. We do not see these as useful means of dealing with congestion, whatever their justification on other grounds.

6 Regulating the entry into or use of vehicles in congested areas

6.1 Total bans

Total bans on entry into or use in a controlled zone of whole classes of vehicles have the apparent attraction of simplicity. Whilst we do not discount the use of restrictions on entry into some areas, such as bans on through goods traffic imposed for environmental or traffic reasons, a complete ban on all private cars in the centre of towns – which is sometimes suggested – would be needlessly drastic. It would encourage other types of traffic perhaps no more desirable, and would fail to make the best use of the available road space. It would exclude many worth-while and indeed essential uses of private cars. Thus any system of bans on some classes of vehicle would have to be accompanied by permits for some journeys.

6.2 Bans and permits

Under a system of bans and permits the total number of permits issued would need to be related to road capacity. In practical terms a comparatively small proportionate reduction on present traffic flows would be needed. The potential demand for permits would be very high. If permits were issued without regard to individual circumstances, for example to the first so many applicants, or to residents in certain areas, or in relation to arbitrarily defined categories of vehicle or road use, they would have the same sort of disadvantages as total bans. Priorities would therefore have to be decided and applications judged by officials guided by a set of rules. We examined the rationing systems used during national emergencies and concluded that they would not serve as means of dealing with a long-term traffic problem. It might be possible to agree that, say, doctors need their cars to visit patients in emergencies, but we found it quite impossible to frame a set of criteria for judging between the enormous range of commercial, professional, private and public service journeys that make up traffic in towns. Moreover, a system of bans and permits would need to be enforced, but the general feeling that a system of 'exceptions' would arouse among people who were not privileged to hold permits would make enforcement particularly difficult.

6.2.1 Permits for business use of cars

From the analysis made in Chapter 3 it appears that a ban on the use of cars in Central London except for business purposes could reduce the volume of morning peak traffic entering and circulating in the area by nearly a sixth, and the volume of traffic entering Inner London* by perhaps a tenth. This would be a worth-while improvement. We therefore considered whether the use of cars in the course of work could be made the basis for regulation. For example, could private cars be banned from entering a controlled area during the morning peak, unless they displayed business permits? These might be issued by some regulating authority against an employer's certificate (or self-employed person's declaration) that the use of a car was essential to enable the applicant to go about his work during the day and that it was not possible to garage the car in the central area overnight. There are strong objections to this. Not the least of these is the weakness of the proposition that all business use of cars is somehow more justifiable than any non-business use; whereas some business journeys could be made by public transport while some non-business journeys could not. This apart, the administrative effort required to deal with applications would be large, and the cost considerable. Arrangements would have to be made for occasional as well as regular entry. The system would easily be open to abuse. From an economic point of view, restrictions that were not based on price would contain no effective means of measuring the loss to people prevented from making journeys, or of obtaining information to assist in arriving at investment decisions.

---

*See Glossary.

6.3 Conclusions on regulating entry or use of vehicles

We do not consider that a system of bans would be likely to make the best use of road space or that any system of bans and permits could be made publicly acceptable and hence workable and effective. We recommend that these systems should not be considered further as a general means of restraint of traffic, though they may have particular application on grounds of environment or in dealing with localised traffic situations.

7 Charging for vehicles entering or used in congested areas

7.1 The possibilities

We have considered the following ways of charging for road use, short of the direct methods of charging envisaged by the Smeed Panel:

(*a*) differential excise licensing* by area of use;
(*b*) supplementary licences;
(*c*) tolls;
(*d*) admission charges.

7.1.1 Differential excise licensing by area of use

A system of differential excise licensing by area of use would mean that the licence at the ordinary rate, now £17 10s. for a private car, would not be valid for designated congested areas. For cars used in these areas a higher-priced licence, which might cost between £50 and £100 per year, would be needed instead of the ordinary excise licence.

7.1.2 Supplementary licences

A supplementary licensing system would mean that an *additional* licence would be needed to bring a vehicle into or to use it in a designated zone, as well as the normal excise licence. The essential difference between this and differential excise licensing by area of use is that supplementary licences could be valid for single days or for other periods unrelated to the annual or four monthly validity of the excise licence.

7.1.3 Tolls

A toll system would simply mean that each time a vehicle entered a designated zone, the driver would have to pay a toll, either in cash or by giving-up a pre-paid ticket at the point of entry.

7.1.4 Admission charges

A system of admission charges would seek to combine the pre-payment advantages of a supplementary licence, with the simplified enforcement of the toll system.

7.1.5 The cases studied

We have examined the practical aspects of applying these systems of restraint to the centre of London and a large provincial city. In both cases we considered areas that were both commercial and shopping districts, surrounded by by-pass routes and with a limited number of access routes. We selected these places quite arbitrarily in order to study the enforcement requirements and the effects of traffic. They were not intended to represent areas which we thought suitable for practical applications of measures of restraint, even on an experimental basis.

---

*See Glossary.

7.2 General considerations

There are several aspects of controlling entry or use of vehicles in a congested area that are common to all the systems considered. The most important of these is enforcement, and is dealt with mainly in Chapter 10. The other important considerations are:

(*a*) the method of control;
(*b*) the size of the controlled area;
(*c*) the effects on parking in and around the controlled area;
(*d*) the period of control;
(*e*) the administrative organisation required.

We deal with these before considering the individual systems of restraint.

7.3 The method of control

There are broadly three possibilities:

(*a*) *normal licensing control* as at present, in which checks are generally incidental to normal police action;

(*b*) *cordon control* governing entry into a controlled area; and

(*c*) *area control* in which checks would be made on vehicles throughout the controlled area.

It would obviously be possible to use a combination of these methods.

7.3.1 Normal licensing control

At present this results in some 120,000 cases of infringement of vehicle excise licensing being reported annually in Greater London. The number of undetected offences is, of course, not known. The effectiveness of this type of enforcemen is limited. Its adequacy probably depends on the nature of the licensing system. For example, it might be adequate for a differential rate of excise duty (especially if the differential were comparatively small, when it would, of course, act only as a weak restraint), but would be less likely to be adequate for supplementary licensing for single days or short periods. In general, the shorter the period for which a licence could be obtained, the less do we consider that normal licensing control would suffice as a method of restraint. Motorists would soon find that for a period of, say, a week or less the risk of detection would be relatively small. It would not then be a sufficient deterrent to evasion unless there were a high fixed penalty, which would raise problems of public acceptability in relation to the treatment of other motoring offences.

7.3.2 Cordon control

Control at a cordon would be used to prevent unauthorised vehicles from entering a controlled area. Unless it were reinforced by enforcement within the area it would not affect journeys starting there. In Central London these internal journeys account for 44% of car and goods vehicle traffic throughout the day, and 36% at the morning peak. Even so, cordon control would still operate on a very substantial proportion of central area traffic and it would reduce traffic on radial routes leading to the central area. The manpower required for enforcement would depend on the number of entry points, that is to say, on the circumference of the controlled zone rather than its area; so that, in general, quadrupling the controlled area would only double the manpower required.

7.3.3 Area control

Control throughout an area would affect all traffic within the controlled area, whether generated there or coming in from outside. If it applied only to stationary vehicles on the streets it would resemble a system of street parking control in its enforcement requirements, though it might have advantages over parking control in other ways, such as in its application to all classes of vehicle. It would have clear advantages over parking control if it also operated against moving as well as parked vehicles, so as to deter through traffic and to act on vehicles parked off the streets. If restrictions were applied for only part of the day, some check on moving vehicles would be needed in any event, in order to deter evasion by road users who might otherwise claim that they had parked before the control period began. Enforcement against moving vehicles would require a series of check points throughout the area and traffic circulation would suffer. As the size of area increased the enforcement effort would increase pro rata with it. The implications of this are dealt with in Chapter 10.

7.4 The size of the controlled area

In a large city the central business and shopping district may be only part of the congested area. But outside the central district the pattern of land use becomes very different. The ratio of residents to the working population, and the number of vehicles based in the area, both increase very sharply. An illustration of this is given in the Appendix, which shows the contrast between the characteristics of the former L.C.C. area and the hypothetical controlled area we have considered in Central London. In this study we have considered in some detail how controls might be applied to a comparatively small central area, and only more generally the effects of increasing the size of the controlled area.

As the size of the area increased, a flat-rate charge would become increasingly inequitable between short and long distance travellers and ineffective in limiting vehicle mileage run in the area; several long journeys would attract the same charge as one short trip. A system of differential rates for inner and outer areas, or for pockets throughout an area, would overcome these objections but would greatly complicate the scheme. It would compare unfavourably with parking controls in the certainty of detecting offenders and flexibility as to prices charged. The larger the area, the more economical it would become to employ cordon rather than area control. But cordon control around a large area would discriminate unreasonably against short journeys across the cordon line, and would leave long internal journeys unaffected. The larger the area, the more pronounced this effect would be until, for example, a cordon round an area about the size of Greater London would be almost useless because over 93% of traffic is generated inside the area.

Thus as the size of the controlled area increased both cordon and area controls would have serious and increasing defects or difficulties. Assuming that either cordon or area control could be made workable in all other respects, we consider even in London a practicable maximum size of controlled area over which a flat rate were charged might be no more than 10 square miles (1½ to 2 miles radius).

7.5 The effects on parking in and around the controlled area

Where congestion exists or could build up around a controlled area, parking controls would be needed in this surrounding area to ensure that cars were not brought as close to the area boundary as possible before the drivers changed their means of travel. If this were not done in London, for example, the beneficial effect of restraint in the centre would be offset by congestion in the inner suburbs. It appears from a recent survey in Central London that three-quarters of meter parking is for business purposes. The demand for short period parking near to shops, business premises, etc., during off-peak hours in a controlled area could be expected to be very little affected by a licensing system designed to be mainly effective against car commuters. Supervision of street parking would therefore still be necessary, in addition to controls on entry or use.

Any system of control would therefore need to be accompanied, to a varying degree according to local circumstances, by street parking controls within and around the controlled area, and also restrictions on publicly available all-day off-street parking space around the outside of the controlled area.

7.6 The period of control

As the analysis in Chapter 3 shows, a long period of control in Central London would not have substantially greater traffic advantages, and could have unwanted effects as compared with a much shorter period of control, covering the morning peak. Restrictions on morning peak travel would also reduce evening peak traffic. The amount of evening peak travel is usually greater than in the morning peak, presumably because it includes return journeys from in-going trips made throughout the day, and also in-going journeys by night workers and for leisure purposes. But it does not at present seem necessary or desirable to restrict the amount of traffic entering a town centre during the evening peak. Nor does control of out-going traffic seem desirable, because:

(*a*) the decision to make the journey comes before the in-going trip, when the traveller chooses the time at which to travel. He can be expected to have less control over the timing of the out-going return journey. Control over out-going traffic would be more irksome, and hence more difficult to enforce than control over in-going traffic;

(*b*) enforcement would be more difficult, especially during the dark winter evenings.

There would be advantages all round in a control confined to the morning peak, so as to have the maximum effect on journeys which could most readily be diverted to public transport and the minimum effect on business, shopping and leisure journeys.

7.7 Administration

We have considered what would be involved in administering the various systems of charging. Differential excise licences would have to be issued by the local taxation offices and post offices for the areas in which vehicles were currently licensed. Other methods of charging would probably entail setting up new organisations to issue licences or tickets both in bulk and to individuals, through local distribution points such as post offices, vending machines and, perhaps, commercial garages and at points of entry into the controlled area. We have been unable to make any real assessment of the manpower or costs involved in this, but it seems likely that a scheme applicable to Central London would require a staff of substantially more than 100 for this purpose and would cost at least £½m. a year to administer.

7.8 The characteristics of particular systems

In the light of the general considerations set out above, we have considered the main features of the four systems referred to at the beginning of this Chapter. The enforcement aspects are dealt with in Chapter 10.

7.8.1 Differential excise licences based on intended area of use

A system of this kind, linked with the present vehicle excise licensing arrangements, would appear to be simple to administer, understand and apply. But there would be the following objections to restraint by this means:

(*a*) the licence period would need to correspond to the normal motor licensing periods of four months and one year. Occasional travellers would therefore have to pay relatively more than regular travellers for each journey made and the cost of infrequent journeys would be made prohibitive;

(*b*) unless it were possible to surrender a licence and obtain a re-issue during the licensing period there would be a strong incentive, once a licence had been purchased, to use the licensed vehicle in preference to any other form of transport in the controlled area; but the facility of surrender and re-issue would add greatly to the cost and complexity of the system;

(*c*) changes of ownership of the vehicle would entail re-licensing unless it so happened that the new owner required the same type of licence as the former owner. Second-hand car dealing would involve similar complications;

(*d*) all local taxation offices would have to be able to issue licences for any controlled area. Various standardised rates would eventually be needed for different congested areas. Since a vehicle cannot be in two places at once it would seem logical for a licence to be valid for any area requiring the same or a lesser rate of tax. This would mean that more than one type of licence would be valid for some areas, which would complicate understanding and enforcement of the scheme;

(*e*) an annual rate of tax of, say, £50 to £100, would be likely to create an increased demand for four monthly licences, both because of the higher cost and because users might not be prepared to commit themselves to paying in advance for long periods for the use of their vehicles in the controlled area. This would add to the volume of ordinary work in local taxation offices, which are already becoming seriously over-stretched;

(*f*) because of the high value of the licence incentives for evasion, fraud and forgery would be much greater than in the case of the ordinary excise licence.

In short, a system which combined restraint by price with excise licensing would be insufficiently flexible, and would create new and complex administrative and enforcement problems without any apparent compensating advantages as compared with other pricing systems. We conclude that this method would not warrant further consideration unless and until all motor taxation was dealt with centrally, and all other means of restraint had failed to be effective. Even then, the consequential effects of making occasional journeys into controlled areas much more costly than regular car travel would be demonstrably inequitable, would not discourage those who had bought a period licence and would be a strong incentive to evasion by casual users.

7.8.2 Supplementary licensing

The Smeed Panel preferred a daily licence system to differential licensing. They suggested that daily licences might be bought in advance in books. Refunds would be made on unused licences. This would ensure that holders would only make journeys into controlled areas when they considered it would be worth the extra cost. The Panel considered that, to obtain the best results, a graduated system of concentric price zones, with the cost increasing towards the centre, would come nearest to being an efficient form of charging by this means. Charging for vehicles entering or used in congested areas presents great practical difficulties. Whilst we recognise the advantages of graduated charges, we consider that it would first be necessary to establish whether a single zone with a flat rate charge is a practical proposition.

We therefore considered systems based on a single zone and using pre-purchased, flat-rate, daily, weekly or monthly supplementary licences. The main advantage that such systems would have over differential excise duties would be that a road user could buy a licence in advance for the period that most suited his requirements (as a rail passenger does when buying a daily or season ticket). They would not confront period licence holders with the daily choice provided by the Smeed system, and to that extent, might be less efficient. But they would not need to contain the complication of refunds on unused licences. The administrative problems implicit in differential excise licensing would be obviated. A new administrative organisation would need to be set up in each local authority area concerned, to handle the sale of licences through various possible outlets, such as post offices, garages and vending machines.

7.8.3 Tolls

Toll systems seem to work effectively at bridges and tunnels in this country without close police supervision of enforcement. They are also familiar on motorways in the U.S.A. and on the Continent. In most of these cases, except perhaps at the Mersey Tunnel, the pattern of traffic is very different from that in town centres. If congestion at approaches is to be avoided, the entrance to the toll collection area must be wide enough to allow several toll booths per lane of road. For bridges and tunnels, these areas are required only at the ends. Access points to toll motorways abroad are at considerable intervals. But, for a controlled area in a city, toll collection areas would be needed on at least all the main access routes. On most routes into city centres this would entail considerable and expensive road-widening schemes at the point of entry, involving some demolition of buildings. It is mainly for this reason that the Smeed Panel appear to have found the classic toll system unsuitable for urban use, and so do we.

7.8.4 Admission charges

We sought a means of combining the pre-payment advantages of supplementary licensing with the simplicity of enforcement of toll charges. Daily, weekly or monthly admission tickets for entry into a controlled area might, for example, be bought in advance, with daily tickets available for purchase on entry, at a somewhat higher price. Entry to the area would only be possible at a limited number of check points – perhaps 20 to 30 for Central London – and the roads would have to be widened at these points, though probably to a smaller extent than for toll points. Other access roads would need to be closed, converted to one-way or tidal flow working or watched to prevent unauthorised entry. A system of this kind would obviously be very costly to introduce in the central area of a large city, and would scarcely be practicable in many places. Because a satisfactory solution has not been found to the traffic engineering problems, we cannot say that such a system would be workable. But we suggest that if charging for entry into a congested area is considered to warrant further study, it should be along these lines.

7.9 Legislation

Legislation would be needed in order to introduce any scheme of pricing entry or use of vehicles in congested areas, even as an experiment. Schemes of this kind would not necessarily be confined to one city, and would need to be co-ordinated nationally. Details would need to be worked out in close consultation between the Ministries concerned, local authorities, the police and other interested bodies. It would be necessary to decide whether local authorities or the Government should have responsibility for introducing schemes, and for administering them, and, depending on the type of system, whether local authorities or the police should be responsible for enforcement. This preparatory work would inevitably take time, quite apart from the considerable road-works that would be needed before the system could be brought into use.

7.10 Conclusions on charging for vehicles entering or used in congested areas

We consider that a licence or ticket system based on graduated charges would be too complicated to be practicable. A flat rate charge covering a large area would be inefficient, and unequal in its effects as between journeys of different lengths and, in the case of cordon control, between journeys within the area and those crossing the cordon.

A scheme which operated during the morning peak period only would be preferable. One which operated throughout the day or during both the morning and evening peaks would not bring significantly greater benefits and would cause greater disruption to commercial, shopping and recreational traffic. For example, in London, the composition of traffic and the nature and extent of congestion is such that a scheme covering the morning peak, from Monday to Friday and affecting private cars and motorcycles would be likely to be the most worth-while proposition. *Differential excise licensing* would have serious disadvantages as compared with other licensing systems considered. *Supplementary licensing*, as generally understood, would have great enforcement difficulties. A *toll* system, in the classic sense, would be unsuited to urban conditions. But it might be possible to devise a workable and useful system based on *admission charges* for entry by car into a comparatively small area during the morning peak period, provided that:

(*a*) an organisation could be set up that would enable the bulk of users to have pre-payment tickets;

(*b*) the traffic engineering difficulties at the entrances to the area could be overcome without extensive demolition and street widening works at these points;

(*c*) the scheme were accompanied by controls on street parking throughout the controlled area and the immediately surrounding area. Control of long-term off-street public parking space in this surrounding area might also be necessary; and

(*d*) sufficient administrative and enforcement staff could be recruited.

8 Parking controls and loading restrictions

In this Chapter we consider the contribution that might be made to the relief of congestion by controlling car parking and restricting kerb-side loading (and unloading).

Chapter 3 demonstrates the contribution to improved traffic conditions at peak hours that might result from less car commuting. The analysis also shows the difficulties and uncertain advantages of diverting through traffic round the centre, unless there are good alternative routes. A system of restraint that affected peak hour journeys with destinations in the central area might therefore go a good way towards achieving the sort of traffic pattern that represented the best use of road space. An essential feature of car commuting is that the commuter must be sure of finding space to park all day, preferably without having to move the vehicle from one place to another or 'feed' a meter. We have considered the contribution of parking controls to traffic restraint against this background.

8.1 Past and present parking policies

Different towns have reached different stages in implementing parking policies, depending on their traffic conditions, scale of redevelopment, street pattern, etc. But the main components of the policies are the same and can best be summarised in relation to three categories of parking:

(*a*) on-street;

(*b*) in publicly available off-street parks (whether publicly or privately provided); and

(*c*) in privately available off-street space.

For on-street parking, the present policy is to prohibit parking wherever it would obstruct traffic movement and to ration other space wherever demand is high, usually by allocating it to short-term parking, with or without enforcement aids such as discs and parking meters. In general, space is then left for long-term parking only when short-term requirements have been met in full.

Successive Governments have encouraged local authorities to get parking off the streets. The powers given to local authorities to provide public car parks in mixed developments, and the statutory requirement for net revenue from parking meter schemes to be used towards the cost of off-street parking reflects this. Many local authorities subsidize the provision of off-street parking space, as being in the best interests of the town. Others are prepared to restrict free street parking, so as to allow charges to approach the economic level and so encourage private enterprise to help in providing off-street car parks.

The provision of private parking space in new buildings has been encouraged through the use of planning standards. These were originally instituted on the principle that new buildings should 'consume their own smoke' as far as parking was concerned. But it has often had the effect of creating fairly lavish provision in buildings where the operational needs for car parking space are slight, and the space made available for all-day parking has stimulated car commuting.

Present on- and off-street parking policies are in many places under review and are increasingly taking account of the need to relate total parking space to the capacity of the road system. The need to do this has been explained to local authorities in a Government Bulletin.[7] However, to use parking control deliberately to restrain the use of vehicles for entire classes of journey in congested areas would in practice be a major change in policy for most local authorities. Where street parking is limited to specified places, as in controlled parking schemes, this does, in fact, reduce the total amount of parking space available. But control of street parking as a means of restraint would mean more than this. It could involve reducing the amount of space available for parking on the street, whether or not parking interfered significantly with the traffic flow requirements in a particular street. It could mean eliminating at least some of the present uncertainty surrounding parking, so that drivers would know with reasonable certainty, before setting-off on a journey, whether or not they could expect to find the right sort of parking space, and what it would cost them. Similarly, big changes might be needed in the policy relating to publicly and privately available off-street parking space. This might involve re-consideration of the present policy of using net revenue from short-term parking at meters to subsidise longer-term parking off-street.

The changes in parking policy that would be needed to make it an effective restraint would vary from place to place, and also according to the time scale over which it is desired that any new policy should become effective. The present parking pattern of car commuters driving into an area is obviously of crucial importance. These are the car users who must now be reasonably certain of being able to find parking space. We have therefore attempted to analyse this pattern for car commuters travelling into Central London at peak times. We are aware that the parking pattern in Central London may well be untypical of the rest of the country, particularly because of the growth of privately available car parking space in new developments in London in the last decade or so.

8.2 Control of car parking in London

In 1964, about 30,000 of the cars arriving in Central London during the morning peak appeared to be used solely for commuting. We estimate that their parking was, in broad terms, divided more or less equally between uncontrolled street parking, off-street private parking space, and public off-street car parks. There were probably no significant numbers of car commuters parking at meters – see paragraph 8.3.1 below.

The 10,000 or so commuter cars parked privately off-street only half filled the privately available parking space in the area. There is, therefore, probably a reserve of parking space at present under private control which might tend to be brought into use if there were further controls on street parking. This, together with the pattern of car commuter parking, means that any parking restraints that are to be effective must bear on more than one of the three categories of parking space. Equally, however, measures that did effectively reduce the present scale of use of any two of these categories by car commuters could significantly relieve congestion over a wide area. Extensions to the Central London parking schemes reduced the number of uncontrolled street parking spaces by about 4,000 spaces in 1966 and there will be a further reduction in 1967. Plans to control street parking throughout the 40 square miles of the Inner London Parking Area have been announced by the Greater London Council[8] and are supported by the Minister of Transport.

Control in the central area alone would not be enough. Control of street parking in Central London has led many would-be car commuters to drive as close as possible to the controlled area, park their cars, and continue their journeys on foot or by public transport. To alleviate traffic congestion over a wide area, parking near to their destinations would have to be made so difficult for many car commuters that, at most, they would use their cars only to get to their local public transport system. It would thus be necessary to extend parking control – and with it enforcement – over a wider area than the central destinations of car commuters. But it seems likely, from the present distribution of parking space, that the wider control need apply only to street parking and not necessarily to off-street parking, at any rate for a few years to come.

8.3 A parking policy to relieve congestion

A parking policy to relieve congestion would need to be directed towards one or more of the following:

(*a*) extending street parking control throughout and beyond central areas;
(*b*) controlling the use of car parking space in private buildings in central areas by fiscal or other means and ensuring that the standards set by planning authorities for the provision of space in new buildings conform with transport policy;
(*c*) examining the total existing and planned capacity of all day off-street publicly available car parks in central areas and ensuring it does not create undue demand for road space;
(*d*) possibly reducing parking spaces in individual streets below the numbers allowed by the requirements of traffic flow in these streets; and
(*e*) adjustment by local authorities of time limits and charges for on- and off-street public parking space, so as to equate demand with available capacity, and to create sufficient unoccupied space for motorists to be able to find a place to park without cruising around.

8.3.1 Parking at meters

From a recent survey it appears probable that 85% of meters in London are occupied by 10 a.m. and nearly half of all meter users leave Central London between 4 p.m. and 6 p.m. We therefore considered whether it would contribute usefully to reducing congestion to ban parking at meters before, say, 10 a.m., or after 4 p.m. We do not consider this would be desirable, since meters are not widely occupied by car commuters, many of whom can conveniently use public transport, but by others more reliant on cars, such as the business callers who account for 75% of parking meter users. Nor can we see any practicable way of imposing restrictions on the use of parking meter bays so as to discourage or prevent drivers from driving away from them during the evening peak. In any event, so far as commuters' parking is concerned, the demand for short-term parking in Central London is always likely to fill so much of the available street-parking space that it is very unlikely that there will ever be a significant amount of all-day parking in controlled parking zones.

8.3.2 Parking space not available to the general public

There were in 1964 about 17,000 parking spaces associated with offices, and a further 16,000 associated with shops, education establishments, public buildings, industry and public utilities in Central London. This type of parking space is not generally available to the public. Means of obtaining control over this parking space might include:

(*a*) making available for public use garages and parking spaces of viable size, say those with a capacity of 50 or more cars (which would include 40% of all private parking in Central London). Some owners might be willing to do this. But if it meant acquiring garages outright the difficulties could be very great, though the cost potential could be expected to be at least partially offset by revenue from parking charges;

(*b*) charging a tax in respect of each parking space, preferably in such a way that it was on actual use of parking space, and was passed on to the user. This system was suggested by the Smeed Panel. A workable system has not so far been devised. Something might be achieved by the use of meters or ticket machines; but it would be a formidable task to levy charges on the use of all parking space throughout a controlled area;

(*c*) in either case, offering the owner the option of being able to apply to the planning authority for permission to change the land use and extinguish unwanted garage space by converting it to other purposes. This could have unwanted effects, such as increasing the amount of office space in a central business district. For example, any substantial addition to office space resulting from the conversion of parking space in Central London would have repercussions on the Government's policy for controlling office expansion there.

Whatever method or combination of methods were thought desirable, questions of cost, maintenance and management would require detailed examination by the local authority in consultation with the Ministries concerned. To give full effect to these policies new legislation would be required.

8.3.3 The effects of comprehensive parking measures

The new parking policy proposed here involves a combination of price mechanism and regulation. We were unable to make a full evaluation of its economic effects. But such calculations as have been made of the effect of using price alone as a parking control provide some indication of the sort of benefits that might be achieved. The Smeed Panel suggested that the degree of restraint obtainable by imposing a parking charge of 6s per day (at 1962 prices) would be about 40% as effective, in terms of saving of resources, as full road pricing, giving a reduction in Central London of about 7% in peak traffic. As a result, peak speeds might rise by 1½ mph. The economic analysis made as part of the present study (see Chapter 11) suggests that a charge of 1s an hour would reduce the *car* traffic in the part of Central London to which it applied by between a quarter and a third at the peaks, and by about one-eighth off-peak, giving increases in traffic speeds of about 15% and 5% respectively.

8.4 Enforcement

The enforcement problems created by extending on-street parking control would be considerable and are discussed in Chapter 10. Although the cost in manpower for enforcement may be high, it seems no higher than that required for the same effectiveness of enforcement of any other forms of restraint that we have considered in detail.

8.5 Loading and unloading restrictions for goods vehicles

Chapter 3 shows the possible contribution to relieving congestion through restrictions on day-time loading and unloading on the streets. Present policy is to restrict loading and unloading at times when and places where it interferes with traffic. Although this contributes to relieving congestion through increasing street capacity, it is not intended to act as a restraint, and probably does not do so. More drastic measures of this kind could serve as a restraint by diverting some goods traffic away from normal working hours. As we have said in Chapter 2, this would have significant social and economic effects, and these should be investigated as part of any further development of measures of restraint. Whilst measures affecting goods traffic may need to be considered in conjunction with measures affecting other traffic, we see disadvantages in restricting the use of goods vehicles in advance of measures against traffic with more obvious and less inconvenient alternatives, such as car commuting.

8.6 Conclusions on parking controls and loading restrictions

The desirable degree of control over parking and over loading and unloading vehicles on the streets must obviously vary from place to place. But in places where the problem is already acute, it seems that the growth of potential demand is such that it would be a considerable achievement to prevent the present volume of traffic increasing still more and nullifying the increase in road capacity expected to be obtained from traffic management and road improvements. We consider that the sort of parking policy outlined in Section 8.3 might well achieve this degree of restraint. In many towns, where there is comparatively little privately available parking space in central areas, comprehensive control over street parking may well be all that is necessary; but we think that where a good deal of private parking is possible, as in Central London, some public control of privately available off-street space would be necessary in order to make comprehensive control effective. If owners were not willing to co-operate, this would not be easy to achieve and could be very expensive. We suggest that further study of this problem of excessive private parking space is needed, by the local authorities and Government Departments concerned.

9 Direct charges for road use

The methods of control discussed in Chapter 8 could possibly be introduced within the next two or three years; a system of admission charges for entering some areas might take somewhat longer to implement. The vehicle uses which make up traffic vary widely in value. In congested traffic the least valuable uses cost more to other road users (mainly in terms of delay) than this less valuable traffic gains from using the road. For this reason, parking and admission charges which cannot be related directly to the actual use made of the road must, in varying degrees, be limited in their efficiency, as well as in their effects, as compared with direct road pricing. We therefore consider that the greater potential efficiency of full road pricing warrants further study of this method as a possible long-term means of restraint.

The Smeed Panel investigated the technical possibilities of 'metering' road use and charging for it directly. They concluded that every vehicle used in a congested area (ultimately more than ten million in all) would need to be fitted with a meter and some tell-tale device to show that it was working, at a cost of £5–10 a vehicle. The meter could be operated by the driver or actuated from the roadside. Enforcement techniques would need to be worked out. Some of the enforcement requirements might be similar to those needed for supplementary licensing and the difficulties might be as great; but it may be possible to develop automated means. An administrative, maintenance and testing organisation would be needed.

A good deal of further work is necessary on the practical details of a road pricing system of this type before conclusions can be reached about its feasibility. We were not well constituted for this work, and it would not, in any event, have been possible to have made this assessment within the time available. But our consideration of the problems of restraint generally leads us to suggest that the main fields of work would be:

(*a*) development of a technically reliable system. From evidence given to the Smeed Panel it seems likely that it would take two or three years to find out whether a workable system could be devised. The co-operation of industry would be needed;

(*b*) the problems of enforcement and administration;

(*c*) further studies of the economic, social and planning implications; and

(*d*) consideration of the impact of road pricing on the present system of motor taxation. This might entail a review of taxation on transport generally.

Road pricing cannot therefore be a quick solution, and it would probably be unrealistic to expect that it could take much less than six or seven years to bring a system into full operation.

Despite this, the possible long-term benefits and advantages of full road pricing appear to be so great that we consider a research and development programme should be developed by the Ministry of Transport, in co-operation with other Departments concerned. Road pricing has implications for motor taxation policy which ought to be examined at an appropriate stage in this programme.

10 Enforcement

The effectiveness of any system involving restrictions on the use of vehicles will depend upon the extent to which it is observed. Many types of traffic offence are not widely regarded as being anti-social, let alone criminal, so that social pressure to observe them is correspondingly low. Enforcement must therefore depend primarily upon patrol and similar activities in the street, which is expensive in manpower (which is already difficult to recruit in the areas where parking problems are most difficult, as in some large conurbations) and can be expected to become even more so as the vehicle population increases. Enforcement can be simplified by making the commission of offences self-evident (as with the use f yellow line carriageway markings) and by streamlining police and court rocedure.

10.1 Street parking controls

Experience in Central London leads to the conclusion that, in the conditions which prevail there, the most effective form of street parking control now available is by meters. It is probably more readily enforceable than any other form of parking control. It could well be that if parking were made more costly, if the area of parking controls were greatly increased, and if the number of parking spaces were deliberately restricted as a traffic measure, then enforcement would become more difficult than it now is. No allowance has been made for these imponderables in the figures below, but the inference to be drawn from them is that the figures are minima.

10.1.1 The manpower requirement and cost

Experience in London suggests that outside the centres of large cities a reasonable standard of enforcement can be achieved by having about 25 wardens' beats per square mile. In busy central areas where there is a heavy demand for parking space, as many as 70 beats per square mile may be needed. For all-day supervision, each beat requires two wardens. If a high level of enforcement is required in the early part of the morning when commuters arrive in the central area, more wardens will be needed. On the other hand, where there is a high proportion of long-term meters about thirty wardens per square mile may be enough. This suggests that if restraint by parking controls were applied in Central London to an area with a radius of four miles from Charing Cross, at least another fifteen hundred wardens would be needed. Such a force would cost about £2½m. a year, although it could be expected that this would be recouped from meter revenue. A very considerable recruiting drive would be needed to obtain this number of wardens for duty in and around Central London.

In 1964 some six thousand traffic tickets were issued each week in the whole of England and Wales – the total for London was about four thousand a week. In London about 40 % of tickets are paid within the time limit, a further 30 % after a reminder has been sent, and 22 % are written off. Action has to be taken against the other 8%. The number of tickets that might be issued for parking infringements if parking control were to be extended and intensified cannot be estimated; but it would be considerably more than at present.

In addition to the direct cost of traffic wardens there is the cost of administrative support, including accommodation in central areas where it is often scarce and expensive, and follow-up action. The warden patrols must be backed by:

(*a*) an organisation to receive fixed penalty payments, and to follow up cases where excess charges and fixed penalties are not paid on time (in London, the Metropolitan Police Central Ticket Office);

(*b*) a smaller organisation to deal with associated court proceedings; and

(*c*) the magistrates' courts and staff.

Economy might be possible by simplified procedures, possibly linked to a computer. We are informed that plans for automatic processing of the work of the Central Ticket Office in London are now well advanced.

10.2 Controlling entry into or use of vehicles in congested areas

The possibilities for controlling entry into or use of vehicles in a congested area were discussed in Chapter 6. There would be, broadly, three ways of using controls of this kind:

(*a*) towards stationary vehicles only;

(*b*) towards moving vehicles;

(*c*) towards both stationary and moving vehicles in an area.

10.2.1 Enforcement towards stationary vehicles

This would be very similar to the enforcement of parking controls. The only extra duties would be that wardens would have to check the presence and validity of a licence as well as the parking meter position or time spent parked, and they would have to enter off-street car parks to check on cars parked there. The supplementary licence requirement could, like parking offences, perhaps also be enforced by a fixed penalty system. There could be no effective enforcement against through traffic and vehicles parked privately or other categories of traffic which now escape parking control. Thus enforcement against stationary vehicles would require a greater enforcement effort than would parking controls. Whether it would be a more effective restraint than parking control alone would depend on the extent to which road users who did not park in the area voluntarily co-operated.

10.2.2 Enforcement towards moving vehicles

Enforcement against moving vehicles would increase the difficulty of detecting offenders and would introduce the problem of extracting them from dense traffic or otherwise bringing them to book. It would be virtually impossible, under the present methods, to prove an offence of the kind envisaged, without actually stopping the suspected offender at the time of the offence. This rules out any system relying on observation and subsequent enquiries. Enforcement through conventional observation methods would entail channelling vehicles past observers so that they could be checked on the move, and so that suspects could be stopped further on. Means of doing this have been studied in some detail. It could only be done at considerable cost. It would probably mean providing at least three traffic channels for every two lanes of road: it is more likely that at least two channels per lane would be needed. Traffic engineering works would be required which would either significantly reduce road capacity (by as much as a third to a half) or would necessitate road widening, requiring perhaps 200 to 500 yards of kerb length and one-fifth to two-thirds of an acre of land for the control process at each check point. Arrangements would have to be made to by-pass traffic, for example buses, that might be exempt from control. Because of this, enforcement against moving vehicles by conventional observation could only be at fixed points. It would not be practicable to cover an area with check points without leaving some loop-holes which would soon become known. Check points of this kind could only be used to cordon an area. Random checks on moving vehicles would seem to necessitate channelling traffic through portable barriers (for example, as is now done for traffic surveys or police checks) which would themselves create congestion. We were unable to find satisfactory solutions to these problems.

The Police estimate that the number of enforcement officers required for a cordon control in London might be:

	Size (sq. miles)	*Officers*
Central London (as in Figure 1)	9	260
Inner London (roughly 12 miles across)	110	520

Using the same basis of calculation for Birmingham the situation might be:

	Size (sq. miles)	*Officers*
Central Area	4	80

The above numbers would be additional to those required for the associated parking controls. They are based on not less than three officers being needed on two-way roads up to 50 feet wide, at least six on wider two-way and major one-way roads, and an officer at each prohibited access point.

10.2.3 Enforcement towards both stationary and moving vehicles

More vehicles probably park on street or in public car parks than drive through the centres of large cities. Given a high level of enforcement against parked vehicles, it would probably be reasonable to assume that quite a low level of enforcement against vehicles in the traffic stream (perhaps reinforced by higher penalties) would prove a sufficient deterrent to allow a licensing system to work. The enforcement effort required for area control would then be reduced, but would still be substantial, and more than would be required for checks on stationary vehicles only. It would mean checking moving vehicles in a random way and, as explained above, we have not found a satisfactory means of doing this. The complications and cost of enforcement of systems which created new offences would be formidable. We have therefore come to the conclusion that if it were considered desirable to charge extra for the entry or use of vehicles in a congested area it would be necessary to devise a system which could be enforced in a similar way to a toll by, in effect, making an admission charge (see Chapter 7). Some police backing would be required. Enforcement would be simpler and less costly, but we are by no means certain it would work. Quite apart from the constriction caused by ticket inspection, the flow of traffic would depend very much on motorists' acceptance of the scheme and the proportion of them who bought licences on entry or who disputed payment and had to be diverted. There would also be the requirement to by-pass uncontrolled traffic.

10.3 Enforcement procedures

If parking controls seem to offer the only practical short-term solution, a special study will be needed, by the Government Departments and the authorities concerned, to decide how the necessary staff is to be obtained. More economical methods of enforcement need to be devised as quickly as possible. Parking meter time limits create the need to issue and follow-up excess period notices, which represent nearly half of all parking enforcement incidents in the Metropolitan Police area. The circumstances under which *time limits** are necessary when associated with parking charges should be reviewed. Other ideas that have been canvassed include *owner liability for parking offences*, and the *conversion of fixed penalties into civil debts* to local authorities; both would require changes in the law. But a major advance in techniques, perhaps employing automatic methods, would be needed to achieve a substantial saving in manpower, and could change the whole nature and quality of enforcement against moving vehicles. We suggest the possibilities should be thoroughly investigated.

10.4 Conclusions on enforcement

Effective enforcement would be governed by the techniques used and the manpower available. In areas of high employment, which also tend to be places where congestion is worst, there would be great difficulty in recruiting the number of wardens required to enforce adequately, by present methods, any effective scheme requiring parking controls or checks on the use of vehicles over a considerable area. These difficulties have, in any event, to be faced in the further parking meter schemes already proposed for the London boroughs.

The importance of simplification of enforcement is clear. In the longer term there may be possibilities of automatic techniques using, for example, electronic or photographic aids. We also think that:

(*a*) the need for time limits on meter parking should be reconsidered;

(*b*) procedures for enforcement of parking regulations should be reviewed with the aim of reducing the time and effort involved in the follow-up action.

Whatever other systems of control might be introduced, parking control would also be necessary. If new methods of restraint were to be introduced before new enforcement techniques could be developed, the level of enforcement would fall. The consequence of this could be that there would be a grave risk of this aspect of traffic law falling into contempt, which would seriously affect public attitudes towards it, making evasion more common and enforcement more difficult.

---

*The reasons why time limits are not necessarily essential to parking control by meters have been argued in the City of Liverpool Planning Consultant's Report on Parking[9] and by Mr. G. J. Roth[10]. They are broadly that regular, long-term parkers are more sensitive to the cost of parking all day at a meter, than occasional or short-term parkers.

11 The economic costs and benefits of restraint of traffic in Central London

We considered it to be essential to this study of the feasibility of methods of restraint by pricing to evaluate the effect of various levels of price on the volume of traffic; the losses to those diverted to less convenient means of travel or routes; and the benefits from the increased ease of movement of those vehicles remaining on the road system. These effects of restraint by price can be expected to differ in each town, depending on the particular pattern of travel and the network of roads and public transport. To throw light on the subject we commissioned Mr. J. M. Thomson of the London School of Economics to make a study of the effects of additional financial restraint on the use of private cars and motorcycles in the particular case of the area of Central London shown in Figure 1. This chapter summarises his findings.

In the time available it was not possible to undertake any new survey work either into the nature of Central London traffic, or into the responsiveness of elements in this traffic to changes in cost. For the former, data already collected by the Road Research Laboratory and for the London Traffic Survey were used. For the latter, new methods of estimation had to be devised. It was necessary first to estimate what proportion of present car and motorcycle journeys into or through Central London would be diverted by a price barrier. Second, it was necessary to estimate the increase in other types of traffic – mainly commercial traffic, buses and taxis – which would follow any alleviation in traffic conditions in the central area. For all these types of traffic a method of estimating responsiveness to changes in cost (more precisely, elasticity of demand* for the use of the central area road system) had to be devised.

The cases selected for study were:

(*a*) a *supplementary daily charge* for the use of cars and motorcycles in the controlled area between 8 a.m. and 7 p.m. on working days;

(*b*) a similar system covering the period 8 a.m. to 10 a.m. only;

(*c*) an *hourly parking charge* for all cars and motorcycles parked in the area between 8 a.m. and 7 p.m. on working days.

11.1 Supplementary daily charges for the use of cars and motorcycles in the controlled area

11.1.1 The effects on through car and motorcycle traffic

The extra costs to through traffic in time and vehicle operation involved in diverting round the controlled area were calculated. Clearly those journeys which merely 'cut a corner' of the area could be most easily diverted, whereas those that went right across the area – thus saving 2 miles – would be deterred only by a much higher charge. It is estimated that a charge of 1s would only divert 10% of cars travelling through the area, 6s would divert over three-quarters, and 10s would divert nearly all of them.

---

*See Glossary.

11.1.2 The effect on car and motorcycle traffic to destinations in the area

For vehicles with destinations in the central area the problem was much harder. No previous research had been done which was aimed directly at the question of how much car users would be prepared to pay for use of the streets in city centres. But there is indirect evidence from a number of sources. As was mentioned in Chapter 2, car traffic in Central London has been growing at a very much slower rate than in urban areas generally – including the Greater London area as a whole – in spite of the fact that car ownership in London has been growing at roughly the national rate. It could be plausibly assumed that this was due to the deterioration in motoring conditions – increased congestion and difficulty in parking – in Central London as compared with urban areas generally, though other factors such as the development of suburban shopping and business districts may have contributed. The relative increases in cost and in traffic could be measured to give a figure for elasticity of demand for the use of cars in Central London. Similar results were yielded by an analysis of the relative uses of private transport by car-owning households on journeys to central and non-central areas of London, and by a comparison of the relative proportions of peak and off-peak use of private transport to central and non-central areas. All these studies pointed to an elasticity of demand of about 1.3, implying that increases in cost would lead to a more than proportionate decrease in car traffic. In the situation envisaged in this study a charge at the rate of 6s a day for entry by cars (and 3s for motorcycles) would reduce the volume of car and motorcycle traffic with destinations in Central London by about 40%. This, combined with the reduction of about three-quarters of the through car and motorcycle traffic, would reduce the use of private transport within Central London by about half.

11.1.3 The effect on buses and taxis

The effect on traffic conditions of this reduction of car traffic would depend on the extent to which space released by cars was taken up by other types of traffic attracted in larger volumes to the central area. A larger flow of public transport vehicles could be expected both to cater for the displaced motorists, and to improve the attractiveness of bus services as compared with, for example, the Underground.

11.1.4 The effect on goods traffic

Increases in goods traffic could also be expected, though they would probably take a long time to come about. As with car traffic, the method of estimating the long-run increase in goods traffic relies on the fact that commercial traffic in Central London has grown much more slowly than the national rate, and that this may have been due to the increasingly heavy cost of commercial vehicle operation consequent on increasing traffic congestion. This approach gives an elasticity of demand of 0.8, and an increase of goods traffic in the central area of about 12%.

11.1.5 Summary of estimated changes

Changes in each element of traffic in the licence area are summarised in Table 11–1.

11.1.6 The net benefits from a supplementary daily charge

These traffic changes, with increases in average speed of 25% in peak hours and 21% in off-peak hours, may appear modest. But Central London would look very

Table 11–1 Traffic flows and speeds with and without a licence fee of 6s per day (average flow of vehicles per hour on main roads in Central London)

Type of vehicle	Peak hours		Off-peak hours	
	Without licensing	With licensing	Without licensing	With licensing
Cars—				
through	236	52	170	37
terminating	965	581	693	389
All cars	1201	633	863	426
Motorcycles	432	261	70	42
Commercial vehicles	369	418	610	676
Buses	139	193	100	100
Taxis	208	298	223	295
Total vehicles per hour	2349	1803	1866	1539
Total pcu's per hour	2522	2225	2325	2049
Average car speeds (mph)	9·1	11·4	10·5	12·7

different under these conditions. Roughly speaking, they amount to a return to 1957 volumes of traffic, travelling – due to the increase in road capacity and the improvements in vehicle design since that date – at average speeds greater than have been experienced since records began in 1952. The economic benefits (time savings and vehicle operating costs) to traffic in Central London would be substantial; after taking account of the losses to those who are restrained, the net benefits are estimated at £5–6m. per year. Well over half these are savings to buses – mainly time savings to bus passengers. A 6s fee (at 1965 prices and traffic) would bring the maximum benefit but 80% of the net benefits could be secured by a fee as small as 3s or as large as 8s. The revenue in licence fees from a daily charge of 6s might amount to about £5m. a year if applied all day, and perhaps £1m. a year if levied on morning peak traffic only.

11.2 An hourly parking charge for all cars and motorcycles parked in the controlled area

11.2.1 The impact of the charge

The potential benefits of an hourly charge for all cars and motorcycles parked publicly or privately in the controlled area between 8 a.m. and 7 p.m. on weekdays was also considered. This would have a somewhat different impact in that:

(*a*) 'resident' vehicles not used during the day and vehicles arriving before 8 a.m. and leaving after 7 p.m. would be subject to a parking charge, but not an admission charge;

(*b*) through traffic would be liable to an admission charge but not a parking charge; and

(*c*) an hourly charge would be a greater deterrent to long-term parkers than to short-term parkers, whereas a daily licence would not necessarily discriminate between them.

11.2.2 The effect of a parking charge

The information on which to assess the effects of parking charges is even less than is available for a supplementary daily charge for the use of vehicles, but assuming that an hourly charge were levied on all cars and motorcycles parked in the area (motorcycles at half price) the following tentative conclusions have been reached:

(*a*) the greatest benefit in peak hours would be obtained from a charge of 9d an hour, with increases in average speed from 9.1 to 10.4 mph (14%);

(*b*) the greatest benefit in off-peak hours would be from a charge of 2s an hour, with increases in average speed from 10.5 to 11.6 mph (10%);

(*c*) the greatest benefit over the whole day would be from a charge of 1s an hour, although the results would not be significantly better than for 9d an hour. A higher charge than 1s an hour would cause losses to long-term parkers, which would not be balanced by benefits to other traffic, including bus passengers;

(*d*) given a charge of 9d or 1s an hour, the net benefit *in the controlled area* would be a little over half that estimated for a 6s daily licence.

11.3 The validity of the conclusions

These calculations are necessarily based on a large number of assumptions and estimates, and the figures cannot be regarded as precise predictions. Some of the assumptions have already been described in paragraph 11.1.2 above. Other assumptions had to be made to bring the traffic statistics for Central London into line with the smaller licence area. It was impossible to take account of the effect that a change in the composition of traffic due to discrimination against the private car might have on relationships between speed and flow that are based on observations of normal traffic composition. Assumptions also had to be made about the distribution of lengths of journey. This was important because a licence fee or parking charge represents a small percentage increase in the cost of long journeys – and thus a weak deterrent – as compared with short journeys. Savings from increased traffic speeds, both in time saved by drivers and passengers, and in vehicle operating costs, have been calculated in accordance with the formulae developed by the Road Research Laboratory[11] which are widely used in traffic studies.

Nonetheless, we have found no reason to doubt the broad picture which the study presents of the extent and value of improvements to traffic conditions in the central area resulting from an extra charge of 6s per day. They accord well with what common observation would suggest and with the analysis of the effects of restraint referred to in Chapter 3. There is clearly a lot of car travel to Central London, especially at the peak, for which public transport is a good substitute and which could well be diverted by a daily charge of around 6s, whether through a supplementary charge for using a vehicle or as the cost of parking, and the benefits to the very much larger number of bus passengers could be expected to be substantial.

11.4 The effects of supplementary daily charges and parking charges in the central area on traffic in Inner London

An important question, to which the study was unable to give a quantitative answer, is the effect on traffic conditions outside the central area, especially in Inner London. An important factor would be the through traffic diverted by the licensing scheme from Central London on to the badly congested road system in the inner suburbs. It seems that the great majority of the thirty thousand through car journeys per day would be diverted to a non-central route rather than to public transport, adding perhaps 50,000 car miles per day to the traffic in Inner London. Against this, some proportion of restrained car users would transfer to public transport for the whole journey or at a station in the outer suburbs, rather than drive to the fringe of the central area and park. It is impossible to say whether the reduction in restrained traffic would be more or less than the increase in through traffic. The traffic problems created by the enforcement of a system of supplementary daily charges would not arise with a parking charge. On the other hand the relief in Inner London during off-peak hours would be less with a parking tax than with an all day licence (though more than with a morning peak licence) because of its relative inefficiency in restraining short-term parkers. The possibilities of diversion, generation and suppression of traffic in Inner London are so great that a detailed traffic study, and probably actual experiments, would be needed to establish where the balance of advantage would lie, as between charges for parking and additional charges for vehicle use.

12 Manpower, operating costs and revenue estimates

The analysis of costs and benefits in the previous chapter does not take into account the cost of operating a system of restraint. These costs would be made up of:

(*a*) capital costs of traffic engineering works, street signs, road markings and meters or vending machines; and

(*b*) annual costs of administration, maintenance and enforcement.

A further and important factor is the manpower requirement discussed in Chapter 10. From information about the costs of parking meter schemes and existing licensing systems we have attempted to cost schemes for area and cordon control by supplementary licensing, and for admission charges, applied to the area in Central London shown in Figure 1.

12.1 Charging for vehicles entering or used in the controlled area

Under a system of charging for the entry into or use of vehicles in an area the charges would need to be designed to restrain demand to the required level, rather than be related to the cost of operating the scheme. The net revenue obtainable must therefore be uncertain. We have aimed, primarily, at assessing whether such schemes would cover their overheads.

Difficulty is experienced in obtaining part-time wardens in Central London. We have therefore assumed that staff would need to be employed full-time even though enforcement might be required only during the morning peak (all-day control would, in any event, require two shifts of wardens – see para. 10.1.1). We have also assumed that, although there would be no excess charge notices to follow-up, the same numbers of staff as would be needed for this purpose would also be required for the sale of licences or tickets. We have assumed charges of 6s a day (see Chapter 11), or £75 a working year, throughout, and have taken the same basis for administration, maintenance and enforcement costs as for parking controls. The resultant estimates of costs and revenue are necessarily tentative and must be treated with caution. They take no account of the costs of land or road works at control points, which on the basis of conventional enforcement methods would add substantially to capital costs.

12.2 Parking control

Under a system of parking control designed to act as a restraint, meters might be distributed more sparsely than under existing parking meter schemes. We cannot assess the effects of this and so have assumed the same ratio of costs as for the more profitable parking meter schemes now in operation.

12.3 Manpower, operating costs and revenue

Table 12–1 is based on the assumptions described above, and shows the comparative costs and revenue for the various types of control considered in Chapters 7 and 8.

Table 12–1 Estimates of manpower requirements, costs and revenue for control schemes covering part of Central London

Type of scheme	Number of traffic wardens and supporting staff	Initial costs of traffic signs, road markings, and street furniture £m.	Annual costs† £m.	Annual revenue from licences, charges and fixed penalties £m.	Net annual revenue £m.
1. Licensing the use of vehicles in the controlled area	1,100	0·05	1·25	2·75	1·50
2. Licensing the entry of vehicles into the controlled area	400	0·08	0·50	2·00	1·50
3. Charging for the admission of vehicles into the controlled area	350	0·08	0·30	1·90	1·60
4. Comprehensive parking control by parking meters throughout the controlled area	1,000	0·35	1·20	3·10	1·90

†Including administration, maintenance, enforcement, interest and amortization costs.

These are necessarily rough estimates, but they suggest that price-based schemes for controlling morning peak traffic in Central London would be self-supporting and could produce a modest revenue. The cost of a system of permits not based on price would fall on the public generally unless fees were charged for the issue of permits. This fee might need to be 2s to 3s for a one-day permit, which would itself be a considerable deterrent.

These estimates also suggest that a system of admission charges might need significantly fewer staff than both licensing and comprehensive parking control, but might yield much of the same net revenue as a licensing scheme.

An all-day parking charge would yield substantially more net revenue than a morning peak supplementary licence or admission charge, even though it would be less effective in reducing traffic in the controlled area. A scheme for licensing or admission charges which applied all day would entail two shifts of wardens (see Chapter 10), in addition to the other disadvantages discussed in Chapter 7.

Appendix
The characteristics of Central and Inner London

The following table shows the difference in character between:

(*a*) the central area of London, north of the Thames, bounded by the main railway termini (an area rather larger than that in Figure 1); and

(*b*) the former L.C.C. area (an area rather larger than the area termed Inner London in this report).

	Central area north of the Thames	*Former L.C.C. area (including the Central area)*
Area (sq. mls.)	9	116
Resident population	191,000	3,000,000
Employees	1,300,000	2,600,000
Employment density per sq. ml.	150,000	22,500
Cars in households	Probably less than 25,000	315,000
Total cars registered	Not known	391,000
Goods vehicles based in the area	Probably less than 15,000 in the whole Central area north and south of the river	89,000
Major access routes	24	47
Minor access roads	114	286
Number of vehicles crossing the area boundaries on weekdays	1·1m. (Whole Central area)	1·2m.

The information is for 1962. It illustrates:

(*a*) the very great difference in the ratio between the resident population and the working population in the central area as compared with Inner London as a whole;

(*b*) the very different nature of land use in the two areas;

(*c*) the much greater numbers of private cars and goods vehicles based in the whole of Inner London as compared with the central area. This alters the scale of the problem of dealing with internal traffic and residents' parking and access;

(*d*) the much greater density of traffic at the centre; and

(*e*) the small increase in the number of routes to be covered by a cordon round the larger area, as compared with the increase in area that would need to be patrolled to control movement throughout it.

Glossary

Car commuter	In this report, as in *Traffic in Towns*, the term is used to describe a person who uses a car for the journey to and from work without using it for any other purpose during the working day.
Desire line diagram	A series of straight lines between the centres of two zones indicating a desire for traffic movement between them but not the actual traffic routes (see Figures 2 and 3).
Differential (excise) licensing	A system under which owners of vehicles of the same class would in some circumstances be charged different rates of annual excise duty on them, e.g. according to licensing area, or area of intended use.
Elasticity of demand	The responsiveness of demand for a commodity or a service to changes in other economic variables, such as price. Price elasticity of demand is defined as proportionate change in the quantity demanded of a commodity or service divided by proportionate change in its price. Demand is said to be elastic if this ratio exceeds 1. For example, demand for travel by private car would be considered elastic if a 5% change in the user's costs brought about a greater than 5% change in private car use. Similarly, if a 5% change in user's costs brought about a less than 5% change in private car use, the ratio of elasticity of demand would be less than 1, and demand would be described as inelastic.
Individual transport	The movement of people in small vehicles holding only very few people, i.e. in cars and motorcycles, and without payment of fares.
London— Central	The area, north and south of the river, roughly within the ring of main-line railway termini.
Inner (suburbs)	An area of 4 to 6 miles radius represented roughly by the old County of London excluding Greenwich and Woolwich. The outer edge of this area contains a number of heavily overloaded junctions which together have been called 'the glue-pot ring'.
Traffic Survey Area	An area with the configuration of, but slightly larger than, Greater London—roughly the built-up area of London and its suburbs (see Figure 2).
Passenger car units (pcu's)	A means of expressing the relative contributions to congestion made by different types of vehicles when on the move, and thereby of expressing the capacity of a road, or the volume of traffic in terms of a single unit. At traffic lights on urban roads (where most delays usually occur) the values are usually taken to be:

Type of vehicle	*pcu value*
Buses	2¼
Heavy or medium goods vehicles	1¾
Light goods vehicles, cars and taxis	1
Motorcycles (including scooters)	⅓

Permit	An authority to use a vehicle under circumstances when use without a permit would be prohibited. The essential difference between a permit and a licensing system of restraint would be that permits would be issued free or at a cost designed merely to cover expenses.
Public transport	Means of conveying people in mass or on payment of fares, as opposed to 'individual transport' (see above).
Road Pricing	A system of road user taxation whereby users of congested roads would be charged pro rata for the distance travelled or time spent on them, at varying rates according to the degree of congestion.
Supplementary licensing	A system under which a special licence, additional to the ordinary excise licence, would have to be bought in order to use a vehicle in some circumstances.
Traffic Survey	See 'Transportation study'.
Transportation study	A comprehensive study of all demands for movement in a locality (including surveys of land uses, journey purposes and their origins and destinations, home interviews and other investigations) to provide a basis for co-ordinated transport planning. A *traffic survey* is made in order to obtain the information required about personal travel and commercial vehicle use.

References and Acknowledgments

Special studies

Freeman, Fox, Wilbur Smith and Associates, the consultants for the London Transportation Study, were commissioned to make an analysis of the effects on traffic of some restrictions on vehicle use in part of Central London. Section 3.3, particularly, is based on their report and the Figures are taken from it.

Mr. J. M. Thomson, B.Sc.(Econ.), F.S.S., Rees Jeffries Research Fellow in the Economics and Administration of Transport at the London School of Economics and Political Science, was commissioned to make a study of the effects of additional financial restraints on the use of private cars and motorcycles in the same area. Chapter 11 is based on his report.

References

1.	Ministry of Transport.	*Traffic in Towns* (The Buchanan and Crowther Reports), H.M.S.O., London, 1963.
2.	Ministry of Transport.	*Road Pricing: The Economic and Technical Possibilities* (The Smeed Report), H.M.S.O., London, 1964.
3.	London County Council.	*London Traffic Survey*, Volume I, published by the Council, London, July 1964.
	Greater London Council.	*London Traffic Survey*, Volume II, published by the Council, London, July 1965.
4.	Road Research Laboratory	*Variation of traffic flow in urban areas throughout the day*, 1965 (Unpublished).
5.	G. F. Ray and R. E. Crum.	*Transport: Notes and Comments*, National Institute Economic Review, No. 24, The National Institute of Economic and Social Research, London, May, 1963.
6.	Ministry of Transport.	*Carriers' Licensing* (The Geddes Report), H.M.S.O., London, 1965.
7.	Ministries of Housing and Local Government and Transport, Scottish Development Department and the Welsh Office.	*Planning Bulleting No. 7—Parking in Town Centres*, H.M.S.O., London, 1965.
8.	Greater London Council.	*Parking Policy in Central London*, published by the Council, London, 1966.
9.	City and County Borough of Liverpool.	*City of Liverpool, Planning Consultant's Report No. 11—Parking*. Shankland, Cox and Associates, London, 1965.
10.	G. J. Roth.	*Paying for Parking*, The Institute of Economic Affairs, London, 1965.
11.	Road Research Laboratory.	*Research on Road Traffic*, H.M.S.O., London, 1965, Chapter 15.

OP
20 JY
1967
CAMBRIDGE

MINISTRY OF TRANSPORT

Better use of Town Roads

THE REPORT OF A STUDY OF THE MEANS OF RESTRAINT OF TRAFFIC ON URBAN ROADS

LONDON
HER MAJESTY'S STATIONERY OFFICE 1967

Contents

Page

Introduction 1

1. Summary 3

1.1 The basis of the study 3

1.2 The main conclusions 3

2. The objectives of deliberate restrictions on traffic in towns 5

2.1 Making the best use of road space 5

2.2 Diverting travel from individual to public transport 6

2.3 Road safety and environment 6

2.4 Price or regulation? 7

2.5 The broad effects of deliberate restrictions on the use of urban roads 7

3. The scope for deliberate limitation of traffic 9

3.1 Traffic in London 10

3.2 Traffic in provincial towns 10

3.3 The possible effects of restraints on traffic in Central London 12

3.4 Goods traffic 14

3.5 Conclusions on the scope for deliberate limitation of traffic 17

4. The broad means of restraint 18

5. Pricing or regulating vehicle ownership 19

5.1 Pricing ownership 19

5.2 Pricing or regulating street parking by residents 19

5.3 Conclusions on pricing or regulating vehicle ownership 19

6. Regulating the entry into or use of vehicles in congested areas 20

6.1 Total bans 20

6.2 Bans and permits 20

6.3 Conclusions on regulating entry or use of vehicles 21

Page

7. Charging for vehicles entering or used in congested areas 22
7.1 The possibilities 22
7.2 General considerations 23
7.3 The method of control 23
7.4 The size of the controlled area 24
7.5 The effects on parking in and around the controlled area 25
7.6 The period of control 25
7.7 Administration 25
7.8 The characteristics of particular systems 26
7.9 Legislation 28
7.10 Conclusions on charging for vehicles entering or used in congested areas 28

8. Parking controle and loading restrictions 30
8.1 Past and present parking policies 30
8.2 Control of car parking in London 31
8.3 A parking policy to relieve congestion 32
8.4 Enforcement 33
8.5 Loading and unloading restrictions for goods vehicles 33
8.6 Conclusions on parking controls and loading restrictions 34

9. Direct charges for road use 35

10. Enforcement 36
10.1 Street parking controls 36
10.2 Controlling entry into or use of vehicles in congested areas 37
10.3 Enforcement procedures 39
10.4 Conclusions on enforcement 39

Page

11. The economic costs and benefits of restraint of traffic in Central London 40

11.1 Supplementary daily charges for the use of cars and motorcycles in the controlled area 40

11.2 An hourly parking charge for all cars and motorcycles parked in the controlled area 42

11.3 The validity of the conclusions 43

11.4 The effects of supplementary daily charges and parking charges in the Central Area on traffic in Inner London 43

12. Manpower, operating costs and revenue estimates 45

12.1 Charging for vehicles entering or used in the controlled area 45

12.2 Parking control 45

12.3 Manpower, operating costs and revenue 45

Appendix

The characteristics of Central and Inner London 47

Glossary 48

References and Acknowledgements 50

Figures

1 Central London

2 Car commuter traffic to Central London

3 Traffic through Central London

Foreword
by the Minister of Transport

Traffic congestion is a problem that affects us all, whether we travel by car, by bus or on foot. But neither here nor abroad has an effective and lasting remedy been found. This is the report of a study of one approach to the problem, made by a group of government and local authority officials and senior officers of police who were appointed by my predecessor in May 1965. It is intended to provide central and local government with some of the essential information needed for the effective planning of urban transport.

The report considers methods of deliberately limiting the amount of traffic in towns in order to bring about a better relationship between the amount of road space available and the vehicles that want to use it. But there are other important considerations. We will not be able to make better use of roads in towns if we do not improve our public transport, which means creating traffic conditions that help rather than hinder bus operations. And the sheer volume of traffic makes towns less pleasant and more dangerous to live in than they need be. The study was not intended to range over all these aspects of town living, and it must be seen as being part of a whole programme of work needed for tackling the problem of traffic in towns.

There is no shortage of ideas for limiting the amount of traffic in towns. As this report shows, most of them have serious shortcomings. With some of them, the cure could be worse than the disease. An early conclusion from this study was that direct road pricing seemed the most promising long term approach to controlling the use of urban roads. We are now seeing whether a feasible system can be developed.

It is not certain that road pricing can offer a solution; it will in any case not be an immediate one. But congestion is with us now and is becoming more of a problem all the time. Prompt action is needed. This report points to the value of controlling parking as a means of coping with congestion.

The need to limit the amount of traffic in towns varies from place to place and from time to time. Each town needs its own plan. Traffic management is primarily the responsibility of local government; and local authorities have powers to provide and control parking space, both on and off the street. I hope, therefore, that this report will help local councils to develop, and put into effect, realistic traffic and parking plans for their towns.

Barbara Castle